Wisconsin Knowledge and Concepts Examinations
Criterion-Referenced Test

WI

Guide to

Grade 10

Released Item Books
In READING and MATHEMATICS

A QUALITY EDUCATION FOR EVERY CHILD

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Guide to Grade 10 Released Item Books in Reading and Mathematics

This document contains information for using, scoring, and interpreting the released items in reading and mathematics.

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Guide to Released Item Books

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Introduction

What are released items?

The items in the Reading and Mathematics released item books are actual items from the fall 2005 state assessment, the Wisconsin Knowledge and Concepts Examinations—Criterion-Referenced Test (WKCE-CRT). These items will not be used again on the state assessment and may, therefore, be used in Wisconsin for professional development, improving instruction, and student practice. The items in the released item books illustrate the formats and kinds of items that students will encounter on the WKCE-CRT.

How do I use the released item books and this guide?

Professional Development

Released items are useful as educators engage in conversations about what students are expected to know and be able to do to demonstrate proficiency on the state assessments relative to the state model academic standards. Released items can inform discussions about state and local standards, curriculum, instruction, and assessment.

This guide provides instructions for administering the released item books as practice tests and information for scoring the items, including scoring guides and anchor papers for the constructed-response items. The item information tables identify the answer key, what each item measures, depth of knowledge, and item difficulty. Item difficulty is presented as both the percentage of students who answered the item correctly and the scale score location of the item. The item's scale score location describes where the item functions along the ability scale. Items with higher scale score locations are considered more difficult than items with lower scale score locations. Students with scale scores above the scale score location of the item would have a greater probability of answering the item correctly than students with scale scores below the item's scale score location.

Improving Instruction

Teachers may use released items in classroom activities that help students understand how to:

- solve problems
- determine which answer choices are correct, which are incorrect, and why
- respond to constructed response items with complete, thoughtful answers
- approach long and/or multi-step tasks
- use good test-taking strategies.

Student Practice

Students may perform better and with less anxiety if they are familiar with the format of the test and with the types of items they will be required to answer. Note that a student's score on the practice test cannot be converted to a total scale score, used to predict performance on the operational WKCE-CRT, or used to make inferences about the student's learning.

Reading

Sample Directions for Administering the Reading Test

Make sure each student has his or her own test book, a No. 2 pencil, an extra eraser, and scratch paper. Students' test books should be closed.

SAY **In this test, you will read some passages and answer both multiple-choice questions and short-answer questions about those passages. Multiple-choice questions are questions that ask you to choose the best answer. Remember, for the multiple-choice questions, you must fill in the circle completely and make your mark heavy and dark. If you want to change an answer, completely erase the mark you made before making a new mark. You must fill in only one circle for each multiple-choice question.**

Short-answer questions are questions that ask you to write your answer instead of filling in a circle. Write your answer on the lines in your test book. You may also write in the space under the lines, but your answer must stay inside the boxed area. Answers or parts of answers written outside the boxed area will not be scored. You may use scratch paper to help you plan your answer, but remember to write your answer in the boxed area in your test book. After you have written your answer, be sure to read it to make sure you have written your ideas clearly and completely.

For both the multiple-choice questions and the short-answer questions, remember to look back at the reading passages to help you answer the questions. For some questions, you may need to go back to two reading passages to find the answer. Be sure to look back at both reading passages to help you answer these questions.

You will have 40 minutes to do the test. Work until you come to the word "STOP" at the bottom of the page. You may go back and check your answers. When you have finished, sit quietly until everyone else has finished.

Are there any questions?

When you are sure that all students understand the directions, continue.

SAY **Please open your test book to Page 2.**

Demonstrate. Check to be sure that all students are in the correct place in their test books.

SAY **You may begin.**

Record the starting and stopping times.

Record the Starting Time:	Add 40 Minutes:	Record the Stopping Time:
_____	**+ 40**	_____

Check to be sure that students are marking their answers in the appropriate places in their test books.

At the stopping time,

SAY **Stop. This is the end of the test. Please close your test book.**

Collect all test materials. Use the information on the following pages to score the multiple-choice and constructed-response items.

Reading Item Information

Item	Answer Key	Objective/ Subskill	Depth of Knowledge Level	2005 –06 Item Statistics SR: Percent of Students who Chose A, B, C, or D (*Indicates Correct Response). BCR: Percent of Students who Received 0, 1, 2, or 3 Points Format	A or 0	B or 1	C or 2	D or 3	Scale Score Location
1	D	3.3	2	SR	1%	35%	4%	*59%	577
2	A	2.2	1	SR	*81%	4%	6%	8%	487
3	D	3.2	1	SR	14%	4%	11%	*71%	517
4	C	4.3	4	SR	12%	12%	*55%	21%	587
5	C	4.2	4	SR	12%	31%	*44%	11%	598
6	B	3.2	2	SR	17%	*56%	9%	17%	632
7	C	1.1	1	SR	7%	18%	*66%	7%	547
8	D	2.2	1	SR	19%	8%	2%	*70%	554
9	A	2.2	1	SR	*67%	4%	14%	14%	549
10	A	4.2	3	SR	*64%	9%	20%	6%	564
11	D	3.2	3	SR	8%	26%	7%	*58%	574
12	A	2.2	1	SR	*86%	9%	3%	1%	501
13	C	1.1	1	SR	6%	15%	*77%	2%	499
14	B	2.2	2	SR	9%	*75%	3%	12%	530
15	D	2.2	1	SR	6%	11%	5%	*77%	510
16	B	3.3	3	SR	9%	*60%	7%	24%	575
17	A	2.2	1	SR	*50%	8%	29%	12%	585
18	C	3.2	3	SR	13%	22%	*60%	4%	542
19		3.2	3	BCR	10%	25%	42%	19%	501

Objective/Subskill and Depth of Knowledge Level information follows this table.
SR: selected response; BCR: brief constructed response.

Performance Category Scale Score Range

Minimal Performance	Basic	Proficient	Advanced
455 and below	456–502	503–554	555 and above

Reading Objectives and Subskills

Types of Text

The grade 10 reading assessment presents a variety of grade-appropriate reading passages representing literary, informational, and everyday text. Passages may be up to 1,500 words long and some passages may be paired with other, related passages. Students may be asked to read and answer questions about texts such as these:

Literary	Informational	Everyday
Short stories, novel excerpts, poetry, drama, biography, autobiography	Articles, brochures, editorials, essays, memoirs, speeches, interviews, critiques	Charts, schedules, forms, timelines, applications, coupons, consumer product labels or information, product use or warning labels, safety notices, technical instructions, brochures, advertisements, warranties, trouble-shooting guides

Objectives, Subskills, and Descriptors

Objectives (labeled 1, 2, 3, and 4) and subskills (labeled 1.1, 1.2, etc.) denote general knowledge and skills that are assessed and reported on the WKCE-CRT. Bulleted descriptors are *examples* of specific knowledge or skills that may be included within each subskill. The subskills include knowledge and skills *such as, but not limited to* the descriptors.

1. Determine the meaning of words and phrases in context.

1.1. Use context clues to determine the meaning of words and phrases.

- Use context clues to determine the meaning of unfamiliar words.
- Understand the meaning of words and phrases used figuratively.
- Use context clues to determine the meaning of multiple-meaning words.
- Use knowledge of synonyms and antonyms to determine the meaning of words.
- Identify analogies to demonstrate understanding of word meaning.
- Understand connotative and denotative meaning of words.

1.2. Use knowledge of word structure to determine the meaning of words and phrases.

- Identify the meaning of a word with an affix.
- Use knowledge of root words to determine the meaning of a word.

1.3. Use word reference materials to determine the meaning of words and phrases.

- Use an entry from a word reference to determine word meaning and pronunciation.

2. Understand text.

2.1. Demonstrate understanding of literal meaning by identifying stated information in literary text.

- Identify stated information about story elements.

2.2. Demonstrate understanding of literal meaning by identifying stated information in informational text.

- Identify stated information about main ideas and supporting details.
- Identify stated information provided through text features.

2.3. Demonstrate understanding of explicitly stated sequence of events in literary and informational text.

- Identify first, next, and last events.
- Follow steps in a process.

3. Analyze text.

3.1. Analyze literary text.

- Make inferences about story elements.
- Summarize important ideas and events.
- Analyze stated or implied theme, message, or main idea.
- Draw conclusions.
- Identify purpose.
- Analyze diverse viewpoints.

3.2. Analyze informational text.

- Identify implied main ideas and supporting details.
- Identify implied relationships (such as cause/effect and compare/contrast).
- Summarize information.
- Identify purpose.
- Make inferences based on text features.
- Make inferences based on visual information.
- Make inferences about text structure.
- Analyze diverse viewpoints.
- Use graphic organizers to analyze and classify information.

3.3. Analyze author's use of language in literary and informational text.

- Analyze the use of literary devices.
- Recognize and distinguish among genres.
- Make inferences about the author's tone.
- Make inferences about the author's style.
- Analyze the author's use of rhetorical devices.
- Distinguish among types of language (such as formal/informal, literary/technical, and serious/humorous).

4. Evaluate and extend text.

4.1. Evaluate and extend literary text.

- Make connections to text.
- Make predictions.
- Identify and evaluate the author's purpose, point of view, and effectiveness.
- Evaluate diverse viewpoints and influences.
- Distinguish between important and unimportant details.
- Evaluate the credibility of story elements.
- Draw conclusions.

4.2. Evaluate and extend informational text.

- Make connections to text.
- Make predictions.
- Identify and evaluate the author's purpose, point of view, and effectiveness.
- Distinguish between facts and opinions.
- Evaluate the accuracy, currency, and credibility of information.
- Evaluate diverse viewpoints and influences.
- Distinguish between important and unimportant facts.
- Draw conclusions.

4.3. Evaluate and extend the author's use of language in literary and informational text.

- Evaluate the author's word choice and use of language.
- Recognize bias and propaganda in language.

Reading Depth of Knowledge

These depth of knowledge levels are intended to reflect the level of cognitive demand placed on students by test items. As the level of cognitive demand increases, so does the mental effort and integration of information required to answer a test item successfully. Each level represents important cognitive skills, and each level requires the use of cognitive skills in lower levels. For example, a student who is asked to make connections between two texts (level 4) would also need to recall pertinent details from the texts (level 1), understand stated information in the texts (level 2), and make inferences and draw conclusions about each text (level 3). The levels assume grade-appropriate text, vocabulary, and tasks. Test items should represent a range of depth of knowledge levels, and items within each level may represent a range of difficulty as indicated by percentage of students who answered the item correctly or scale score location.

Level 1: Recognizing and Recalling

Students demonstrate a grade-appropriate ability to recognize or recall basic facts, terms, or definitions. For example, a student might be asked to identify an explicitly stated main idea in a text.

Level 2: Using Fundamental Concepts and Procedures

Students demonstrate a grade-appropriate ability to use basic facts, definitions, skills, or concepts. For example, a student might be asked to use information in a text to complete a graphic organizer.

Level 3: Concluding and Explaining

Students demonstrate understanding of grade-appropriate text by using stated and implied information and text elements to draw conclusions. Students explain and convey ideas effectively. For example, a student might be asked to provide details and examples from a text to support a conclusion.

Level 4: Evaluating, Extending, and Making Connections

Students demonstrate their knowledge of concepts when evaluating or interpreting grade-level text. Students make connections among texts, common experiences, and issues. For example, a student might be asked to evaluate an author's effectiveness in achieving an intended purpose.

Reading Rubric for Constructed-Response Items

3 points

- The response demonstrates *thorough understanding* of the reading concept embodied in the task.
- The response is *accurate, complete, insightful, and fulfills all the requirements* of the task.
- Necessary support and/or examples are included.
- Information is clearly *text-based*.

2 points

- The response demonstrates *partial understanding* of the reading concept embodied in the task.
- The response is *accurate* and *fulfills most of the requirements* of the task.
- Necessary support and/or examples may not be complete or clearly text-based.

1 point

- The response demonstrates *an incomplete understanding* of the reading concept embodied in the task.
- The response provides *some information that is text-based*, but does not fulfill the requirements of the task.
- Information provided is *too general* or *too simplistic*.
- Necessary support and/or examples may be incomplete or omitted.

0 points

- The response demonstrates *no understanding* of the reading concept embodied in the task.
- The response is *inaccurate, confused*, or *irrelevant.*
- The student has *failed to respond to the task.*

Reading Constructed-Response Item Scoring Guide

Forms: Public Release	Item #: 19	Item Type: BCR	TB Page #: 11	AB Page #: n/a
Reporting Category: Reading				Max Score Pts: 3
Objective: 3. Analyzes Text				
Subskill: 3.2. Analyzes informational text				
Descriptor: Summarizes information				

Item Stem

Explain the reason for the decline and the survival of the Trumpeter Swan population during the 19th century and what efforts are being made to increase its population today. Be sure to thoroughly support your answer using details and examples from the passage. Write your answer on the lines below.

Responses should be evaluated according to the guidelines outlined below for each score point.

3 points

- The response demonstrates **thorough understanding** of the reason for the decline and the survival of the Trumpeter Swan population in the 19th century and what efforts are being made to increase its population today.
- The student **clearly supports** the response with **highly relevant ideas and details** from the text. For example:
  - The Trumpeter Swan population declined rapidly in the 19th century as a result of market hunting and hat making. It was believed that the species had become extinct by 1900. A small non-migratory population survived in the remote mountain valleys of Montana, Idaho, and Wyoming. Since the Swans were living in such a remote location, they were unable to be hunted like the rest of the species. Wisconsin, Minnesota, and Michigan are attempting to reestablish the Trumpeter Swan by rearing cygnets in captivity. The birds are paired and released at selected wetlands at the age of two. It is believed that the first two years of a cygnet's life are the most difficult to survive. Such departments as the Wisconsin Department of Natural Resources, the Milwaukee County Zoo, the Wisconsin Metro Audubon Society, and the Minnesota Department of Natural Resources are hoping to drastically increase the breeding and migratory pairs using this recovery program.
  - The Trumpeter's population decline was because of hunting and the millinery trade in the 19th century. They barely survived extinction. Luckily, there was a small non-migratory population that was in Wyoming, Idaho and Montana. In the Midwest, steps are being taken to increase the population growth of the Trumpeter Swan. They are putting the birds in captivity then releasing them after two years and allowing them to find safe environments to live in. Hopefully, these steps will help to increase the population of Trumpeter Swans.

2 points

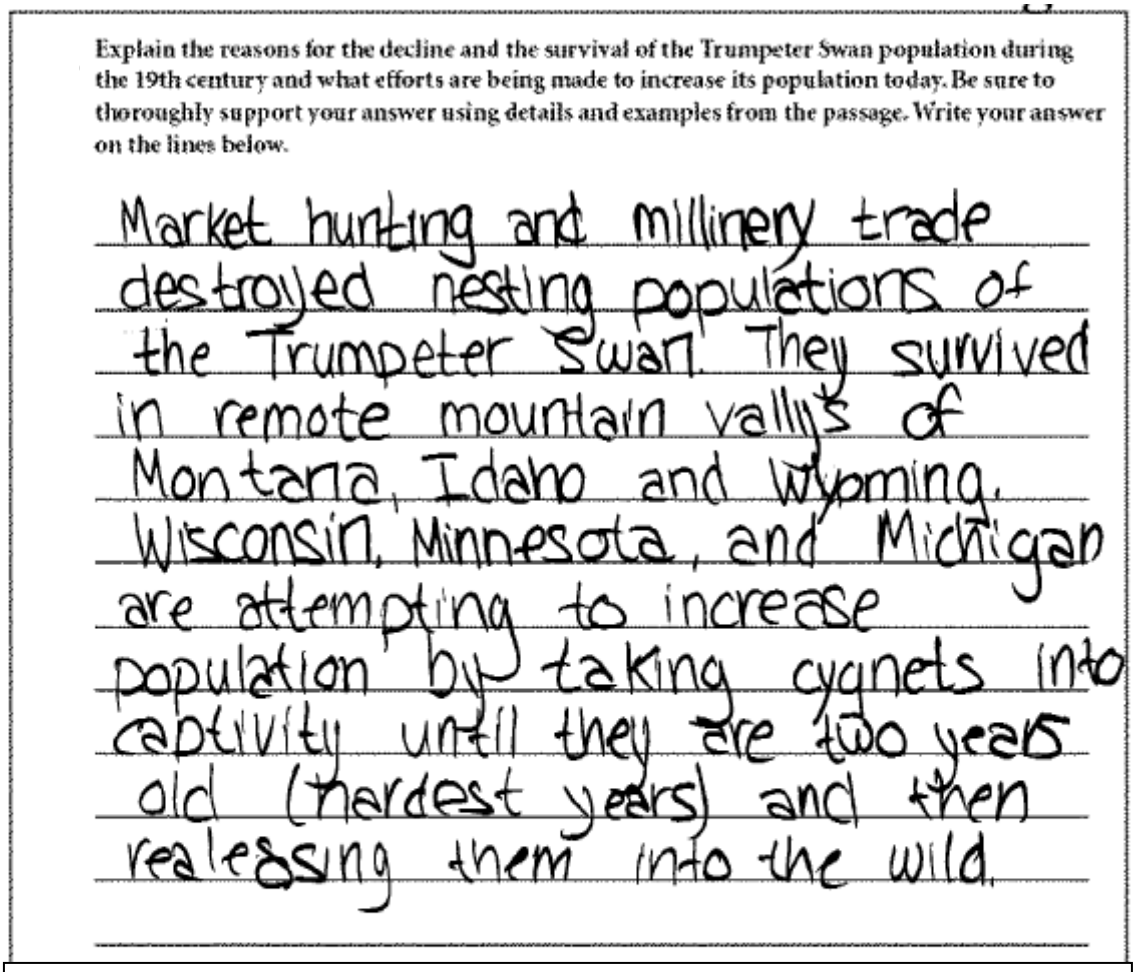
- The response demonstrates **partial understanding** of the reason for the decline and the survival of the Trumpeter Swan population in the 19th century and what efforts are being made to increase its population today.
- The student supports the response with **accurate details** from the text. For example:
  - Trumpeter Swans were once fairly common throughout much of the northern United States and Canada. In the 19th century, they were hunted and their feathers were used to make hats. By the 1900s it was believed that they were extinct. A small population survived in the Midwest. Several organizations have gotten together to help increase the

population of Swans. They create pairs of cygnets and release them into the wild at the age of two.
- The Trumpeter Swan's existence was endangered because of hunting and trade. So many birds were killed that the numbers kept decreasing; many believed that the swan had become extinct. There was a group of non-migratory birds, and they survived. The swan is still more threatened than the American bald eagle.

1 point

- The response demonstrates **incomplete understanding** of the reading passage and does not fulfill all of the requirements of the task.
- Student provides **limited or vague text-based details**. Text-based details may include ideas that are partial, too general, or too simplistic. For example:
  - A small population survived in the remote mountain valleys of Montana, Idaho, and Wyoming.
  - The goal of the WDNR recovery program: to achieve a population of at least 20 breeding and migratory pairs of Swans.
  - Market hunting and the millinery trade rapidly depleted nesting populations during the 19th century.

Anchor Papers for Reading
Constructed-Response Item



Explain the reasons for the decline and the survival of the Trumpeter Swan population during the 19th century and what efforts are being made to increase its population today. Be sure to thoroughly support your answer using details and examples from the passage. Write your answer on the lines below.

Market hunting and millinery trade destroyed nesting populations of the Trumpeter Swan. They survived in remote mountain valley's of Montana, Idaho and Wyoming. Wisconsin, Minnesota, and Michigan are attempting to increase population by taking cygnets into captivity until they are two years old (hardest years) and then realeasing them into the wild.

Score Point 3

>Demonstrates a thorough understanding of the reason for the decline and the survival of the Trumpeter Swan population in the 19th century and what efforts are being made to increase its population today. (Addresses all three parts of the prompt)

>Clearly supports the response with highly relevant ideas and details from the text. (Market hunting and the millinery trade/survived in the remote mountain valleys of Montana, Idaho, and Wyoming/raising cygnets in captivity until age age two and then releasing them/the first two years are the hardest for them)

Explain the reasons for the decline and the survival of the Trumpeter Swan population during the 19th century and what efforts are being made to increase its population today. Be sure to thoroughly support your answer using details and examples from the passage. Write your answer on the lines below.

Market hunting and the millinery trade caused a rapid decline in nesting populations in the 19th century. The survival of the Trumpet Swan is due to a nonmigratory population that survived in the remote mountain valleys of Wyoming, Idaho and Montana. The Wisconsin DNR is working with the Milwaukee County Zoo, the Wisconsin Metro Audubon Society and the Minnesota DNR to achieve a population of at least 20 breeding and migratory pairs. They aren't letting any swans out of captivity until after two years of their lives because the first two years are the hardest.

Score Point 3

>Demonstrates a thorough understanding of the reason for the decline and the survival of the Trumpeter Swan population in the 19th century and what efforts are being made to increase its population today. (Addresses all three parts of the prompt)

>Clearly supports the response with highly relevant ideas and details from the text. (Market hunting and the millinery trade/a non-migratory population survived in the remote mountain valleys of Wyoming, Idaho, and Montana/The WDNR is working with other groups to achieve a population of at least 20 breeding and migratory pairs/release them from captivity after two years as they are the hardest.)

Explain the reasons for the decline and the survival of the Trumpeter Swan population during the 19th century and what efforts are being made to increase its population today. Be sure to thoroughly support your answer using details and examples from the passage. Write your answer on the lines below.

The reason for decline is hunting. Hunterr killed offmost of the swan in the Mid-western region. Wisconsin and Minnesota agencies are raising trumpeter swans in captivity for the first two years of their lives because those are the hardest years of a swans life. The agencies goal was two have atleast 20 pairs of breeding swan by the year 2000.

Score Point 2

>Demonstrates a partial understanding of the reason for the decline and the survival of the Trumpeter Swan population in the 19th century and what efforts are being made to increase its population today. (Addresses the reason for the decline in population and the efforts being made to increase its population today, but does not address the reason for their survival during the 19th century.)

>Supports the response with accurate details from the text. (Hunting/raising Trumpeter Swans in captivity for the first two years of their lives because those are the hardest years of a swan's life/goal was to have at least 20 breeding pairs by 2000.)

Explain the reasons for the decline and the survival of the Trumpeter Swan population during the 19th century and what efforts are being made to increase its population today. Be sure to thoroughly support your answer using details and examples from the passage. Write your answer on the lines below.

In the 19th century, Trumpeter Swans were nearly wiped out. The passage confirms this by saying, "By 1900, it was widely believed that the species had become extinct."

However, some Trumpeter swans survived. The passage says, "Fortunately, a small non-migratory population survived in the remote mountain valleys of Montana, Idaho, and Wyoming." These swans went untouched by humans.

Today, states with a native Trumpeter Swan population are concerned about the species. They have begun raising swans in captivity, releasing them when they are two years old, mature enough to take care of themself in their natural habitat.

Score Point 2

>Demonstrates a partial understanding of the reason for the decline and the survival of the Trumpeter Swan population in the 19th century and what efforts are being made to increase its population today. (Does not explain the reasons they were nearly wiped out/nearly extinct.)

>Supports the response with accurate details from the text. (Fortunately, a small non-migratory population survived in the remote mountain valleys of Montana, Idaho, and Wyoming/begun raising swans in captivity, releasing them when they are two years old.)

Explain the reasons for the decline and the survival of the Trumpeter Swan population during the 19th century and what efforts are being made to increase its population today. Be sure to thoroughly support your answer using details and examples from the passage. Write your answer on the lines below.

The reasons for the decline are that they had no habitat and had nowhere to live in the Midwest. Today, there are numerous efforts being made. One is that they are still on the "endangered" species list, and there is the "Trumpeter Swan Recovery Act."

Score Point 1
>Demonstrates an incomplete understanding of the reading passage and does not fulfill all of the requirements of the task. (Reasons for the decline are not text-based)
>Provides limited or vague text-based details. (Numerous efforts are being made (to increase its population) such as the Trumpeter Swan Recovery Act.)

Explain the reasons for the decline and the survival of the Trumpeter Swan population during the 19th century and what efforts are being made to increase its population today. Be sure to thoroughly support your answer using details and examples from the passage. Write your answer on the lines below.

They declined because of the Hunting and they survived because people started breeding them biologically.

Score Point 1

>Demonstrates an incomplete understanding of the reading passage and does not fulfill all of the requirements of the task. (People were NOT breeding them biologically/Addresses why the population declined only.)

>Provides limited or vague text-based details. (They declined because of the hunting.)

Explain the reasons for the decline and the survival of the Trumpeter Swan population during the 19th century and what efforts are being made to increase its population today. Be sure to thoroughly support your answer using details and examples from the passage. Write your answer on the lines below.

The reasons for the decline & the survival of the Trumpeter Swan during the 19th Century was that they became extinct, & a small population survived in mountain valleys in Montana, Idaho & Wyoming. The trumpeter Swan is more rare in the midwestern States than the bald eagle.

Score Point 1

>Demonstrates an incomplete understanding of the reading passage and does not fulfill all of the requirements of the task. (Only supports why they were able to survive during the 19th century.)

>Provides limited or vague text-based details. (A small population survived in mountain valleys in Montana, Idaho, and Wyoming.)

Explain the reasons for the decline and the survival of the Trumpeter Swan population during the 19th century and what efforts are being made to increase its population today. Be sure to thoroughly support your answer using details and examples from the passage. Write your answer on the lines below.

the swans first 2 years of its life are the hardest to survive. all the swans look different.

Score Point 0

>Demonstrates no understanding of the reading concept embodied in the task. (Does not address any part of the prompt)

>Response is inaccurate, confused, or irrelevant. (All the swans look different is irrelevant.)

>Has written a response but failed to respond to the task. (Uses a detail from the passage but does not relate it to any part of the prompt.)

Explain the reasons for the decline and the survival of the Trumpeter Swan population during the 19th century and what efforts are being made to increase its population today. Be sure to thoroughly support your answer using details and examples from the passage. Write your answer on the lines below.

The population for swans was not very high. The swan made lots of attempts to change that but it really didn't work. I think the population would increase if there was a better habitat.

Score Point 0
>Demonstrates no understanding of the reading concept embodied in the task.
>Response is inaccurate, confused, or irrelevant.
>Has written a response but failed to respond to the task. (Does not use details/examples from the passage to support answer.)

Mathematics

Sample Directions for Administering the Mathematics Test

Make sure each student has his or her own test book, a No. 2 pencil, an extra eraser, scratch paper, the Mathematics Formula Reference Sheet, and the following manipulative:

- ❑ Calculator for Session 2
  (scientific calculator is required, use of a graphing calculator is a student preference)

NOTE: *The use of a calculator is not allowed to solve the problems in Session 1.*

Also required for the operational test, but not for this released item book:

- ❑ Ruler
- ❑ Protractor

Students' test books should be closed.

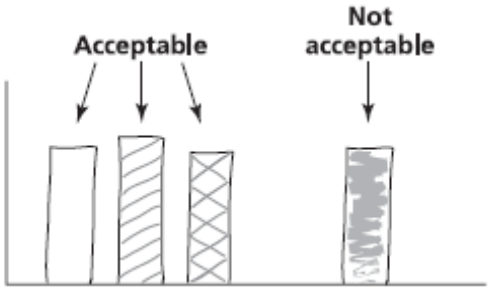
SAY **Remember to use only a No. 2 pencil in this test. In Session 1, you will be answering multiple-choice questions and short answer questions. Multiple-choice questions are questions that ask you to choose the best answer. For the multiple-choice questions, you must fill in the circle completely and make your mark heavy and dark. If you want to change an answer, completely erase the mark you made before making a new mark. You must fill in only one circle for each multiple-choice question.**

You may use scratch paper to work the multiple-choice questions, but remember to fill in the circle that goes with the answer you choose.

Short-answer questions are questions that ask you to write your answer instead of filling in a circle. Each short-answer question has a Step A and a Step B. Write your answers within the boxed area only, on the lines and/or in the space provided. Be sure to answer the question completely to show you clearly understand the question. Do not write outside the boxed area. The boxed area is your answer space. Only what you write in the answer space will be scored. You do not need to use the entire answer space.

For the short-answer questions, if you are asked to complete or draw a chart or figure, please do not use shading in your answer. If you need to erase, make sure you erase completely.

Demonstrate by drawing the illustration below on the board.



Now you will do Session 1 of the Mathematics test. Remember to read all of the directions and information in the test book. When you come to the word "STOP" at the bottom of the page, you have finished Session 1. You may go back and check your answers, but do not go on to Session 2 of the Mathematics test. When you have finished, sit quietly until everyone else has finished.

You will have 5 minutes to do Session 1. Make sure you stop at the end of Session 1.

Are there any questions?

When you are sure that all students understand the directions, continue.

SAY **Please open your test book to Page 2.**

Demonstrate. Check to be sure that all students are in the correct place in their test books.

SAY **You may begin.**

Record the starting and stopping times for Session 1.

Record the Starting Time:	Add 5 Minutes:	Record the Stopping Time:
_____	+ 5	_____

Check to be sure that students are marking and writing their answers in the appropriate places in their test books.

At the stopping time,

SAY **Stop. Put down your pencil and close your test book. This is the end of Session 1.**

Pause to be sure that all students have closed their test books. Before proceeding to Session 2, distribute a calculator to each student.

SAY **Now, open your test book to the page labeled "Mathematics Session 2."**

In Session 2, you will be answering multiple-choice questions and short-answer questions. Multiple-choice questions are questions that ask you to choose the best answer. Remember, for the multiple-choice questions, you must fill in the circle completely and make your mark heavy and dark. If you want to change an answer, completely erase the mark you made before making a new mark. You must fill in only one circle for each multiple-choice question.

Short-answer questions are questions that ask you to write your answer instead of filling in a circle. Each short-answer question has a Step A and a Step B. Write your answers within the boxed area only, on the lines and/or in the space provided. Be sure to answer the question completely to show you clearly understand the question. Do not write outside the boxed area. The boxed area is your answer space. Only what you write in the answer space will be scored. You do not need to use the entire answer space.

Remember, for the short-answer questions, if you are asked to complete or draw a chart or figure, please do not use shading in your answer. If you need to erase, make sure you erase completely.

You will have 35 minutes to do Session 2. Remember to read all of the directions and information in this part of the test book. When you come to the word "STOP" at the bottom of the page, you have finished Session 2.

You may go back over Session 2 to check your answers, but do not go back to Session 1. When you have finished, sit quietly until everyone else has finished.

Are there any questions?

When you are sure that all students understand the directions, continue.

SAY **You may begin.**

Record the starting and stopping times for Session 2.

Record the Starting Time:	Add 35 Minutes:	Record the Stopping Time:
_____	+ 35	_____

SAY **Stop. This is the end of Session 2. Please close your test book.**

Collect all test materials. Use the information on the following pages to score the multiple-choice and constructed-response items.

Mathematics Item Information

Item	Answer Key	Calculator Allowed	Objective/ Subskill	Depth of Knowledge Level	2005–06 Item Statistics SR: Percent of Students who Chose A, B, C, or D (*Indicates Correct Response). BCR: Percent of Students who Received 0, 1, or 2 Points Format	A or 0	B or 1	C or 2	D	Scale Score Location
1	D	No	Fb	4	SR	13%	8%	25%	*52%	587
2	C	No	Aa	2	SR	8%	8%	*78%	6%	527
3	D	No	Fa	1	SR	21%	16%	12%	*49%	585
4	C	No	Cc	3	SR	14%	14%	*53%	18%	618
5	D	Yes	Ea	4	SR	25%	2%	3%	*70%	544
6	C	Yes	Ba	2	SR	20%	8%	*69%	2%	564
7	C	Yes	Da	2	SR	13%	12%	*66%	8%	569
8	D	Yes	Dc	3	SR	19%	6%	15%	*58%	582
9		Yes	Ab	3	BCR	15%	30%	50%		529
10	D	Yes	Ea	3	SR	5%	15%	8%	*71%	544
11	D	Yes	Bb	2	SR	1%	6%	18%	*74%	561
12	B	Yes	Ca	1	SR	21%	*72%	5%	1%	545
13	D	Yes	Ea	2	SR	17%	17%	12%	*53%	579
14	D	Yes	Aa	2	SR	6%	20%	24%	*50%	580
15		Yes	Da	2	BCR	45%	21%	21%		598
16	B	Yes	Cb	3	SR	9%	*71%	14%	6%	550
17	C	Yes	Dc	2	SR	13%	13%	*64%	9%	571
18	C	Yes	Fb	2	SR	5%	12%	*78%	4%	529
19	C	Yes	Ba	3	SR	15%	38%	*40%	6%	616
20	C	Yes	Eb	2	SR	52%	6%	*33%	8%	612

Objective/Subskill and Depth of Knowledge Level information follows this table.
SR: selected response; BCR: brief constructed response.

Performance Category Scale Score Range

Minimal Performance	Basic	Proficient	Advanced
515 and below	516–540	541–594	595 and above

Mathematics Objectives and Subskills

Beginning of Grade 10

How to use the Framework

The mathematics assessment framework is an indication of the knowledge and skills that will be assessed on the November WKCE-CRT. ***This information does not replace your local curriculum***. However, you may wish to ensure that your local curriculum includes the knowledge and skills described in the framework.

This section of the framework describes the types of content that students may encounter on the WKCE-CRT

The knowledge and skills to be assessed are organized into objectives, subskills, and descriptors as shown below. WKCE-CRT results will be reported by objectives and subskill.

A. Objective: A group of cognitively related skills.

A.a. **Subskill:** A group of related knowledge and skills that ***may include, but is not limited to,*** the descriptors which follow.

- **Descriptor:** an example of a specific knowledge or skill that may be assessed.

Objectives, Subskills, and Descriptors

Objective A: **Mathematical Processes**

Students will effectively use mathematical knowledge, skills, and strategies related to reasoning, communication, connections, representation, and problem solving.

Descriptors, such as but not limited to

- Use reasoning and logic to:
  - Perceive patterns
  - Identify relationships
  - Formulate questions
  - Pose problems
  - Make conjectures
  - Justify strategies
  - Test reasonableness of results
- Communicate mathematical ideas and logical reasoning using the vocabulary of mathematics in a variety of ways (e.g., using words, numbers, notation, symbols, pictures, charts, tables, diagrams, graphs, and models).
- Connect mathematics to the real world, as well as within mathematics.
- Create and use representations to organize, record, and communicate mathematical ideas.
- Solve and analyze routine and non-routine problems.

Objective B: **Number Operations and Relationships**

Subskill B.a.: **Concepts**

Descriptors, such as but not limited to

- Compare and order real numbers.

- Analyze and solve problems using percents.
- Apply proportional reasoning and ratios in mathematical and real-world contexts.

Subskill B.b.: **Computation**

Descriptors, such as but not limited to

- Compare, perform, and explain operations on real numbers with and without context (e.g., transitivity, rate of change, exponential functions, scientific notation, roots, powers, reciprocals, absolute value, ratios, proportions, percents).
- Select and use appropriate properties, computational procedures, and modes of representation with and without context (e.g., simple and compound interest, commission, percents, proportions).
- Determine reasonableness of answers.

Objective C: **Geometry**

Subskill C.a.: **Describing figures**

Descriptors, such as but not limited to

- Identify, describe, and analyze properties of 2- and 3-dimensional figures, relationships among figures, and relationships among their parts (e.g., parallel, perpendicular and congruent sides, diagonals, various types of angles and triangles, complementary and supplementary angles, sum of angles in a triangle).
- Present convincing geometric arguments by means of informal proof, counter-examples, or other logical means.
- Model problems using the Pythagorean Theorem and right triangle trigonometry.

Subskill C.b.: **Spatial relationships and transformations**

Descriptors, such as but not limited to

- Use proportional reasoning to solve congruence and similarity problems (e.g., scale drawings and similar geometric figures).
- Use transformations and symmetry to solve problems.
- Visualize 3-dimensional figures in problem-solving situations.

Subskill C.c.: **Coordinate systems**

Descriptors, such as but not limited to

- Use the two-dimensional rectangular coordinate system to describe and characterize properties of geometric figures. Identify and apply symmetry about an axis.
- Use the two-dimensional rectangular coordinate system and algebraic procedures to describe and characterize geometric properties and relationships (e.g., slope, intercepts, parallelism, and perpendicularity, Pythagorean Theorem, distance formula).

Objective D: **Measurement**

Subskill D.a.: **Measurable attributes**

Descriptors, such as but not limited to

- Identify, describe, and use derived attributes to represent and solve problems (e.g., speed, acceleration, density, money conversion.)

Subskill D.b.: **Direct measurement**

Descriptors, such as but not limited to

- Select and use tools with appropriate degree of precision to determine measurements directly.

Subskill D.c.: **Indirect measurement**

Descriptors, such as but not limited to

- Determine the perimeter/area of two-dimensional figures.
- Determine the surface area/volume of three-dimensional figures.
- Solve for angles and segments in similar polygons and arcs in circles.
- Use right-triangle trigonometry functions and the Pythagorean Theorem to solve right-triangle problems.
- Use formulas in applications (e.g., distance formula, simple and compound interest).

Objective E: **Statistics and Probability**

Subskill E.a: **Data analysis and statistics**

Descriptors, such as but not limited to

- Organize, display, compare, and interpret data in a variety of ways in mathematical and real-world contexts (e.g., histograms, line graphs, stem-and-leaf plots, scatter plots, box-and whiskers, bar charts, Venn diagrams, tables, circle graphs).
- Interpret, analyze, and make predictions from organized and displayed data (e.g., measures of central tendency such as mean, median, and mode and measures of variation such as standard deviation, range, dispersion, outliers, line of best fit, percentiles).
- Analyze, evaluate, and critique methods and conclusions of statistical experiments (e.g., randomness, sampling, techniques, surveys).

Subskill E.b.: **Probability**

Descriptors, such as but not limited to

- Determine the likelihood of occurrence of simple and complex events (e.g., combinations and permutations, fundamental counting principle, experimental versus theoretical probability and independent, dependent and conditional probability).

Objective F: **Algebraic Relationships**

Subskill F.a.: **Patterns, relations and functions**

Descriptors, such as but not limited to

- Describe, recognize, interpret, and translate graphical representations of mathematical and real-world phenomena on coordinate grids (e.g., slope, intercepts, rate of change, linear and non-linear functions, and quadratic, exponential, and constant functions).
- Analyze, generalize, and represent patterns of change (e.g., direct and inverse variations, including numerical sequences, patterns to a given term, algebraic expressions and equations).

Subskill F.b: **Expressions, equations and inequalities**

Descriptors, such as but not limited to

- Solve linear and quadratic equations, linear inequalities, and systems of linear equations and inequalities.

- Model and solve a variety of mathematical and real-world problems by using algebraic expressions, equations, and inequalities (e.g., linear, exponential, quadratic).
- Translate between different representations and describe the relationship among variable quantities in a problem (e.g., tables, graphs, functional notations, formulas).

Subskill F.c.: **Properties**

Descriptors, such as but not limited to

- Demonstrate understanding of properties by evaluating and simplifying expressions.
- Demonstrate understanding of properties by solving linear and quadratic equations, linear inequalities, and systems of linear equations and inequalities with one or two variables.

Mathematics Depth of Knowledge

The representative examples for the following depth of knowledge categories are intended to reflect student performance expectations with regard to the level of mental effort and amount of information integrated by the student. Items are targeted at one of four levels of cognitive demand. Each level of demand is represented by items with a range of difficulty, as indicated by the percentage of students who answered the item correctly or by scale score location. Assuming grade-appropriate vocabulary and test items, these levels are viable and useful across all grades.

Level 1: Recognizing and Recalling

Students recognize and recall basic facts, terms, concepts, and definitions of the content and processes of mathematics. For example, students may be required to do computation with whole numbers, fractions, decimals, and integers.

Level 2: Using Fundamental Concepts and Procedures

Students describe or apply basic facts, terms, rules, concepts and definitions of the content and processes of mathematics.

Level 3: Concluding and Explaining

Students demonstrate an understanding of complex ideas, draw conclusions based on this understanding, and communicate ideas and conclusions effectively.

Level 4: Evaluating, Extending, and Making Connections

Students synthesize skills and techniques from various concepts of mathematics to solve multifaceted problems, and justify conclusions using mathematical definitions, properties, and principles. For example, students may be required to support mathematical arguments with definitions, properties, and principles.

Mathematics Rubric for Constructed-Response Items

2 points	The student demonstrates a thorough understanding of the mathematical concepts and/or procedures represented in the problem. The student responds correctly to the problem, uses mathematical procedures and/or concepts, and provides clear and complete explanations and interpretations containing words, diagrams, or calculations unless otherwise specified. The response may contain minor flaws that do not detract from the demonstration of a thorough understanding of the problem.
1 point	The student provides a response that is only partially correct. The student provides a correct solution, but may demonstrate a misunderstanding of the underlying mathematical concepts and/or procedures. The student provides a correct solution, but in place of showing his/her work writes, "I used my calculator." The student provides a thorough demonstration of understanding the problem, but states an incorrect solution or conclusion.
0 points	The student provides a completely incorrect solution, a response that cannot be interpreted, or no response at all.

Mathematics Constructed-Response Item Scoring Guides

Form: Public Release	Item #: 9	Item Type: CR	TB Page #: 9	AB Page #: n/a
Objective: A. Mathematical Processes				Max Score Pts: 0–2
Subskill:				

Response is limited to correct answer or range below

(3 lawn per week)($10 per lawn) = $30 per week
$30 per week from Carla + $30 per week from parents = $60 per week
($60 per week)(20 weeks) = $1200
Car costs $1,500
AND
Carla's estimate of 20 weeks is too low.

Responses may include, but may not be limited to, the Answer Cues below

2 points Both of the following tasks are accomplished:

- The student indicates a total of $1200 (calculation explicit or implicit).
- The student correctly concludes that there is a time or money shortfall.

1 point One of the following applies:

- The student accomplishes one of the tasks above. [See Note.]
- The student accomplishes both of the tasks above, but with a calculation error.
- The student gives a total of $600 and accomplishes the second task correctly.

0 points The student gives any other response.

Note: No credit is awarded for only the answer "no."

Form: Public Release	Item #: 15	Item Type: BCR	TB page #:	AB Page #: n/a
Objective: D. Measurement				Max Score Pts: 0–2
Subskill: D.a. Measurable Attributes				

Response is limited to correct answer or range below

50 gallons = 4 × 50 quarts = 200 quarts
200 quarts = 200 /1.0567 = 189.268 liters
189.268 liters = 189.268 × 1,000 cubic centimeters = 189,268 cubic centimeters

OR

$\left(\frac{50gal}{1}\right)\left(\frac{4qts}{1gal}\right)\left(\frac{1liter}{1.0567qts}\right)\left(\frac{1{,}000cm^3}{1liter}\right)$ = 189,268 cubic centimeter

Responses may include, but may not be limited to, the Answer Cues below

2 points Both of the following tasks are accomplished:

- The student provides a complete and correct conversion process.
- The student gives the correct answer (189,268 c.c. or 189,269 c.c.). (See Notes below.)

1 point One of the following applies:

- The student gives the correct answer only (189,268 c.c. or 189,269 c.c.).
- The student provides a complete but incorrect conversion process (e.g. multiplication instead of division by 1.0567), with a consistent answer (211,340 c.c.).
- The student provides an incomplete conversion process that correctly indicates division by 1.0567.
- The student correctly converts 1 gallon only (3785 c.c.)

0 points One of the following applies:

- The student provides an incomplete and incorrect conversion process;
- The student gives any other inaccurate response.

Note 1: For full credit, the process must be complete, the calculation correct, and the answer between 189,000 and 189,300, inclusive. (This allows for acceptable rounding or truncation during the conversion process.)

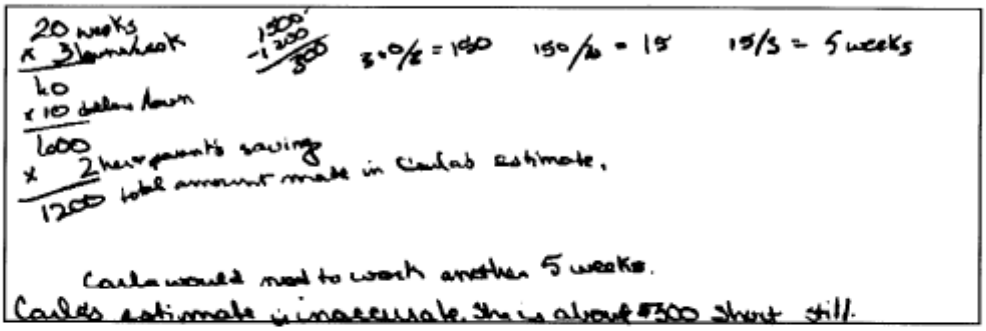
Note 2: The student is not penalized for failing to round or truncate the answer to a whole number.

Anchor Papers for Mathematics
Constructed-Response Items

Item 9

Carla is mowing lawns to earn money for a used car that costs $1,500. Carla's parents have agreed to contribute $1 for every $1 she saves. Carla saves $10 from each lawn she mows. Carla mows 3 lawns per week. Carla estimates that with her parents' help she should be able to purchase the car in 20 weeks.

In the box below, explain whether or not Carla's estimate is accurate. Use mathematics to explain your answer. You may use words, calculations, or diagrams in your explanation.



Score Point 2
> Total of $1200 indicated
> Shortfall of time/money identified

Item 9

Carla is mowing lawns to earn money for a used car that costs $1,500. Carla's parents have agreed to contribute $1 for every $1 she saves. Carla saves $10 from each lawn she mows. Carla mows 3 lawns per week. Carla estimates that with her parents' help she should be able to purchase the car in 20 weeks.

In the box below, explain whether or not Carla's estimate is accurate. Use mathematics to explain your answer. You may use words, calculations, or diagrams in your explanation.

no, she only has $1,200 dollars

Score Point 1
> Total of $1200 indicated
< [shortfall of time/money not identified]

Item 9

Carla is mowing lawns to earn money for a used car that costs $1,500. Carla's parents have agreed to contribute $1 for every $1 she saves. Carla saves $10 from each lawn she mows. Carla mows 3 lawns per week. Carla estimates that with her parents' help she should be able to purchase the car in 20 weeks.

In the box below, explain whether or not Carla's estimate is accurate. Use mathematics to explain your answer. You may use words, calculations, or diagrams in your explanation.

She won't be able to buy the car because she only saved $600.00.

Score Point 0
< [total of $1200 not indicated]
< [shortfall of time/money not identified]

Item 15

An engineer knows that a large container holds a volume of 50 gallons of water. For his latest project he needs to find the volume in cubic centimeters. He will use the conversion factors below to convert 50 gallons to cubic centimeters.

Liquid Measure Conversions
1 gallon = 4 quarts
1 liter = 1000 cubic centimeters of water
1 liter = 1.0567 liquid quarts

In the box below, calculate how many cubic centimeters of water are in 50 gallons. Round your answer to the nearest whole number. Use mathematics to explain your answer. You may use words, calculations, or diagrams in your explanation.

50 gallons * 4 quarts = 200 quarts
200 quarts * 1 liter / 1.0567 quarts = 189.2685 liters
189.2685 liters * 1000 cm^3 = 189,268.5 cm^3
189,269 cm^3

Answer: 189,269 **cubic centimeters**

Score Point 2
> All 3 conversions correct
> Answer correct

Item 15

An engineer knows that a large container holds a volume of 50 gallons of water. For his latest project he needs to find the volume in cubic centimeters. He will use the conversion factors below to convert 50 gallons to cubic centimeters.

Liquid Measure Conversions
1 gallon = 4 quarts
1 liter = 1000 cubic centimeters of water
1 liter = 1.0567 liquid quarts

In the box below, calculate how many cubic centimeters of water are in 50 gallons. Round your answer to the nearest whole number. Use mathematics to explain your answer. You may use words, calculations, or diagrams in your explanation.

50 = 200 quarts
200 = 211.34 liters
211.34 = 211340

Answer: 211340 **cubic centimeters**

Score Point 1
> 2 conversions correct
< [major conversion incorrect (multiplies instead of divides by 1.0567)]
< [answer incorrect]

Item 15

An engineer knows that a large container holds a volume of 50 gallons of water. For his latest project he needs to find the volume in cubic centimeters. He will use the conversion factors below to convert 50 gallons to cubic centimeters.

Liquid Measure Conversions
1 gallon = 4 quarts
1 liter = 1000 cubic centimeters of water
1 liter = 1.0567 liquid quarts

In the box below, calculate how many cubic centimeters of water are in 50 gallons. Round your answer to the nearest whole number. Use mathematics to explain your answer. You may use words, calculations, or diagrams in your explanation.

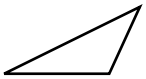
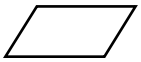
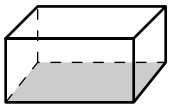
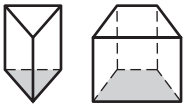
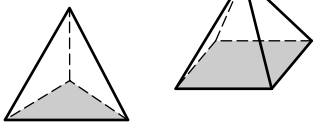
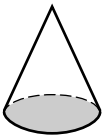
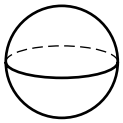
1.0567 liquid quarts
x 4 quarts
4.2268

4.2268
x 50
211.34

Answer: 211 **cubic centimeters**

Score Point 0
< [major conversion incorrect]
< [another conversion omitted]

Wisconsin Mathematics Formula Reference Sheet

Shape	Formulas for Area (A) and Circumference (C)
Triangle 	$A = \frac{1}{2}bh = \frac{1}{2} \times$ base $\times$ height
Rectangle 	$A = lw =$ length $\times$ width
Trapezoid 	$A = \frac{1}{2}(b_1 + b_2)h = \frac{1}{2} \times$ sum of bases $\times$ height
Parallelogram 	$A = bh =$ base $\times$ height
Circle 	$A = \pi r^2 = \pi \times$ square of radius $C = 2\pi r = 2 \times \pi \times$ radius
Figure	**Formulas for Volume (V) and Surface Area (SA)**
Rectangular Prism 	$V = lwh =$ length $\times$ width $\times$ height $SA = 2lw + 2hw + 2lh$ $=$ 2(length $\times$ width) + 2(height $\times$ width) + 2(length $\times$ height)
General Prisms 	$V = Bh =$ area of base $\times$ height $SA =$ sum of the areas of the faces
Right Circular Cylinder 	$V = Bh =$ area of base $\times$ height $SA = 2B + Ch =$ (2 $\times$ area of base) + (circumference $\times$ height)
Right Pyramid 	$V = \frac{1}{3}Bh = \frac{1}{3} \times$ area of base $\times$ height $SA = B + \frac{1}{2}P\ell$ $=$ area of base + ($\frac{1}{2} \times$ perimeter of base $\times$ slant height)
Right Circular Cone 	$V = \frac{1}{3}Bh = \frac{1}{3} \times$ area of base $\times$ height $SA = B + \frac{1}{2}C\ell =$ area of base + ($\frac{1}{2} \times$ circumference $\times$ slant height)
Sphere 	$V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times \pi \times$ cube of radius $SA = 4\pi r^2 = 4 \times \pi \times$ square of radius

Equations of a Line

Slope-Intercept Form: $y = mx + b$

where m = slope and b = y-intercept

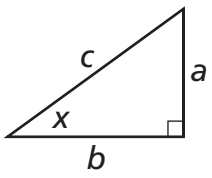
Point-Slope Form: $y - y_1 = m(x - x_1)$

where m = slope, (x_1, y_1) = point on line

Combinations and Permutations

$$nCr = \frac{n!}{r!(n-r)!} \qquad nPr = \frac{n!}{(n-r)!}$$

Formulas for Right Triangles



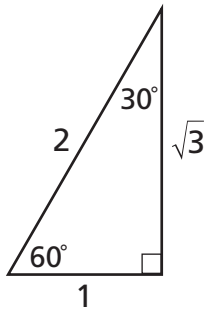
$$\sin x = \frac{a}{c} = \left(\frac{\text{opp}}{\text{hyp}}\right)$$

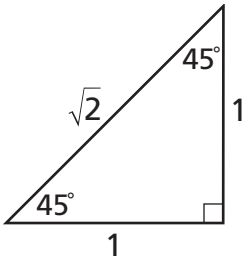
$$\cos x = \frac{b}{c} = \left(\frac{\text{adj}}{\text{hyp}}\right)$$

$$\tan x = \frac{a}{b} = \left(\frac{\text{opp}}{\text{adj}}\right)$$

Pythagorean Theorem: $a^2 + b^2 = c^2$

Special Right Triangles





Coordinate Geometry Formulas

Let (x_1, y_1) and (x_2, y_2) be two points in the plane.

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} \text{ where } x_2 \neq x_1$$

$$\text{midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

$$\text{distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Polygon Angle Formulas

Sum of degree measures of the interior angles of a polygon:

$$180(n - 2)$$

Degree measure of an interior angle of a regular polygon:

$$\frac{180(n-2)}{n}$$

where n is the number of sides of the polygon

Interest Formulas

Simple Interest: $A = P(1 + rt)$

Compound Interest: $A = P\left(1 + \frac{r}{n}\right)^{nt}$

A = amount (including interest)
P = principal
r = interest rate (expressed as a decimal)
n = number of compoundings per year
t = number of years

Quadratic Equations

Let $ax^2 + bx + c = 0$, where $a \neq 0$.

Then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

x-coordinate of vertex = $-\frac{b}{2a}$

Distance Traveled

$$d = rt$$

distance = rate × time

Guide to Grade 10 Released Item Books
In READING and MATHEMATICS

Wisconsin Department of Public Instruction
Elizabeth Burmaster, State Superintendent